

AMENDMENTS TO THE CLAIMS

Please cancel claims 70 and 107-135, and amend claims 39, 69, 71, 104 and 106 as follows:

1. (Original) An electrophoretic medium comprising a plurality of pigment particles suspended in a suspending fluid, the pigment particles having from about 1 to about 15 per cent by weight of the pigment of a polymer chemically bonded to, or cross-linked around, the pigment particles.

2. (Original) An electrophoretic medium according to claim 1 wherein the polymer is cross-linked around the pigment particles.

3. (Original) An electrophoretic medium according to claim 1 wherein the polymer is chemically bonded to the pigment particles.

4. (Original) An electrophoretic medium according to claim 1 wherein the particles have from about 4 to about 15 per cent by weight of the pigment of the polymer chemically bonded to the pigment particles.

5. (Original) An electrophoretic medium according to claim 4 wherein the particles have from about 6 to about 15 per cent by weight of the pigment of the polymer chemically bonded to the pigment particles.

6 (Original) An electrophoretic medium according to claim 5 wherein the particles have from about 8 to about 12 per cent by weight of the pigment of the polymer chemically bonded to the pigment particles.

7. (Original) An electrophoretic medium according to claim 1 wherein the particles comprise a metal oxide or hydroxide.

8. (Original) An electrophoretic medium according to claim 7 wherein the particles comprise titania.

9. (Original) An electrophoretic medium according to claim 8 wherein the titania particles have from about 6 to about 15 per cent by weight of the pigment of the polymer chemically bonded to the pigment particles.

10. (Original) An electrophoretic medium according to claim 8 wherein the titania particles have from about 8 to about 12 per cent by weight of the pigment of the polymer chemically bonded to the particles.

11. (Original) An electrophoretic medium according to claim 1 wherein the particles comprise carbon black.

12. (Original) An electrophoretic medium according to claim 11 wherein the carbon black particles have from about 8 to about 12 per cent by weight of the carbon black of the polymer chemically bonded to the particles.

13. (Original) An electrophoretic medium according to claim 1 wherein the polymer comprises charged or chargeable groups.

14. (Original) An electrophoretic medium according to claim 13 wherein the polymer comprises amino or carboxylic acid groups.

15. (Original) An electrophoretic medium according to claim 1 wherein charged or chargeable groups are bonded to the pigment particles separately from the polymer.

16. (Original) An electrophoretic medium according to claim 1 wherein the polymer comprises a main chain and a plurality of side chains extending from the main chain, each of the side chains comprising at least about four carbon atoms.

17. (Original) An electrophoretic medium according to claim 1 wherein the polymer is formed from any one or more of an acrylate, a methacrylate and a substituted styrene.

18. (Original) An electrophoretic medium according to claim 17 wherein the polymer is formed from any one or more of 2-ethylhexyl methacrylate, methyl methacrylate, isobutyl methacrylate, t-butyl methacrylate, lauryl methacrylate, isobornyl methacrylate, 2-ethylhexyl acrylate, t-butyl acrylate, 2,2,3,4,4,4-hexafluorobutyl acrylate and p-chloromethylstyrene.

19. (Original) An electrophoretic medium according to claim 1 having two types of particles differing in at least one optical characteristic and having differing electrophoretic mobilities.

20. (Original) An electrophoretic medium according to claim 19 wherein both types of particles have from about 1 to about 15 per cent by weight of the pigment of the polymer chemically bonded to, or cross-linked around, the pigment particles.

21. (Original) An electrophoretic medium according to claim 19 wherein the two types of particles bear charges of opposite polarity.

22. (Original) An electrophoretic medium according to claim 19 wherein the two types of particles bear charges of the same polarity but have different electrophoretic mobilities.

23. (Original) An electrophoretic medium according to claim 1 wherein the pigment particles and the fluid are encapsulated in a plurality of capsules.

24. (Original) An electrophoretic medium according to claim 23 having two types of particles differing in at least one optical characteristic and having differing electrophoretic mobilities encapsulated within each capsule.

25. (Original) An electrophoretic medium according to claim 24 wherein both types of particles have from about 1 to about 15 per cent by weight of the pigment of the polymer chemically bonded to, or cross-linked around, the pigment particles.

26. (Original) An electrophoretic medium according to claim 25 wherein the two types of particles comprise titania and carbon black respectively and bear charges of opposite polarity.

27. (Original) An electrophoretic medium according to claim 23 wherein the capsules are held within a polymeric binder.

28. (Original) An electrophoretic medium according to claim 23 wherein the capsules are non-spherical.

29. (Original) An electrophoretic display comprising an electrophoretic medium according to claim 1 and at least one electrode arranged adjacent the medium and capable of applying an electric field to the medium.

30. (Original) An electrophoretic display according to claim 29 having two electrodes disposed on opposed sides of the electrophoretic medium, at least one of the electrodes being substantially transparent such that the electrophoretic medium can be viewed through the substantially transparent electrode.

31. (Original) An electrophoretic display according to claim 29 wherein the suspending fluid and particles are retained within a plurality of capsules, the capsules being retained within a solid binder, and the electrode being secured to the binder.

32. (Original) An electrophoretic medium comprising a plurality of carbon black particles suspended in a suspending fluid, said particles having from about 1 to about 25 per cent by weight of the carbon black of a polymer chemically bonded to, or cross-linked around, the carbon black particles.

33. (Original) An electrophoretic medium according to claim 32 wherein the polymer is chemically bonded to the carbon black particles.

34. (Original) An electrophoretic medium according to claim 33 wherein the carbon black particles have from about 6 to about 14 per cent by weight of the carbon black of the polymer chemically bonded to the carbon black particles.

35. (Original) An electrophoretic medium according to claim 32 wherein the polymer comprises charged or chargeable groups.

36. (Original) An electrophoretic medium according to claim 32 wherein charged or chargeable groups are bonded to the carbon particles separately from the polymer.

37. (Original) An electrophoretic medium according to claim 32 wherein the polymer comprises a main chain and a plurality of side chains extending from the main chain, each of the side chains comprising at least about four carbon atoms.

38. (Original) An electrophoretic medium according to claim 32 wherein the carbon particles and the fluid are encapsulated in a plurality of capsules.

39. (Currently Amended) An electrophoretic medium according to claim 38 having two types of particles differing in at least one optical characteristic and having differing electrophoretic mobilities encapsulated within each capsule.

40. (Original) An electrophoretic medium according to claim 38 wherein the capsules are non-spherical.

41. (Original) An electrophoretic display comprising an electrophoretic medium according to claim 32 and at least one electrode arranged adjacent the medium and capable of applying an electric field to the medium.

42. (Original) An electrophoretic medium comprising a plurality of pigment particles suspended in a suspending fluid, the pigment particles having a polymer chemically bonded to, or cross-linked around, the pigment particles, the polymer comprising a main chain and a plurality of side chains extending from the main chain, each of the side chains comprising at least about four carbon atoms.

43. (Original) An electrophoretic medium according to claim 42 wherein each of the side chains comprises at least about six carbon atoms.

44. (Original) An electrophoretic medium according to claim 42 wherein the polymer is chemically bonded to the pigment particles.

45. (Original) An electrophoretic medium according to claim 42 wherein the particles have from about 4 to about 15 per cent by weight of the pigment of the polymer chemically bonded to the pigment particles.

46. (Original) An electrophoretic medium according to claim 45 wherein the particles have from about 6 to about 15 per cent by weight of the pigment of the polymer chemically bonded to the pigment particles.

47. (Original) An electrophoretic medium according to claim 46 wherein the particles have from about 8 to about 12 per cent by weight of the pigment of the polymer chemically bonded to the pigment particles.

48. (Original) An electrophoretic medium according to claim 42 wherein the particles comprise a metal oxide or hydroxide.

49. (Original) An electrophoretic medium according to claim 48 wherein the particles comprise titania.

50. (Original) An electrophoretic medium according to claim 42 wherein the particles comprise carbon black.

51. (Original) An electrophoretic medium according to claim 42 wherein the polymer comprises charged or chargeable groups.

52. (Original) An electrophoretic medium according to claim 51 wherein the polymer comprises amino or carboxylic acid groups.

53. (Original) An electrophoretic medium according to claim 42 wherein charged or chargeable groups are bonded to the pigment particles separately from the polymer.

54. (Original) An electrophoretic medium according to claim 42 wherein the polymer is formed from any one or more of an acrylate, a methacrylate and a substituted styrene.

55. (Original) An electrophoretic medium according to claim 54 wherein the polymer is formed from any one or more of 2-ethylhexyl methacrylate, isobutyl methacrylate, t-butyl methacrylate, lauryl methacrylate, isobornyl methacrylate, 2-ethylhexyl acrylate, t-butyl acrylate, 2,2,3,4,4,4-hexafluorobutyl acrylate and p-chloromethylstyrene.

56. (Original) An electrophoretic medium according to claim 42 having two types of particles differing in at least one optical characteristic and having differing electrophoretic mobilities.

57. (Original) An electrophoretic medium according to claim 56 wherein both types of particles have a polymer chemically bonded to, or cross-linked around, the pigment particles, the polymer comprising a main chain and a plurality of side chains

extending from the main chain, each of the side chains comprising at least about four carbon atoms.

58. (Original) An electrophoretic medium according to claim 56 wherein the two types of particles bear charges of opposite polarity.

59. (Original) An electrophoretic medium according to claim 56 wherein the two types of particles bear charges of the same polarity but have different electrophoretic mobilities.

60. (Original) An electrophoretic medium according to claim 42 wherein the pigment particles and the fluid are encapsulated in a plurality of capsules.

61. (Original) An electrophoretic medium according to claim 60 having two types of particles differing in at least one optical characteristic and having differing electrophoretic mobilities encapsulated within each capsule.

62. (Original) An electrophoretic medium according to claim 61 wherein both types of particles have a polymer chemically bonded to, or cross-linked around, the pigment particles, the polymer comprising a main chain and a plurality of side chains extending from the main chain, each of the side chains comprising at least about four carbon atoms.

63. (Original) An electrophoretic medium according to claim 62 wherein the two types of particles comprise titania and carbon black respectively and bear charges of opposite polarity.

64. (Original) An electrophoretic medium according to claim 60 wherein the capsules are held within a polymeric binder.

65. (Original) An electrophoretic medium according to claim 60 wherein the capsules are non-spherical.

66. (Original) An electrophoretic display comprising an electrophoretic medium according to claim 42 and at least one electrode arranged adjacent the medium and capable of applying an electric field to the medium.

67. (Original) An electrophoretic display according to claim 66 having two electrodes disposed on opposed sides of the electrophoretic medium, at least one of the electrodes being substantially transparent such that the electrophoretic medium can be viewed through the substantially transparent electrode.

68. (Original) An electrophoretic display according to claim 66 wherein the suspending fluid and particles are retained within a plurality of capsules, the capsules being retained within a solid binder, and the electrode being secured to the binder.

69. (Currently Amended) A two-phase electrophoretic medium comprising a continuous phase and a discontinuous phase, the discontinuous phase comprising at least about 40 per cent by volume of the electrophoretic medium, the discontinuous phase comprising a plurality of droplets, each of which comprises a suspending fluid and at least one pigment particle disposed within the suspending fluid and capable of moving through the fluid upon application of an electric field to the electrophoretic medium, the continuous phase surrounding and encapsulating the discontinuous phase, the pigment particle comprising a polymer chemically bonded to, or cross-linked around, the pigment particle.

70. (Cancelled).

71. (Currently Amended) An electrophoretic medium according to claim ~~[[70]]~~69 wherein the discontinuous phase comprises from about 50 to about 80 per cent by volume of the electrophoretic medium.

72. (Original) A electrophoretic medium according to claim 69 wherein the continuous phase comprises a radiation-cured material.

73. (Original) An electrophoretic medium according to claim 69 wherein the continuous phase comprises gelatin.

74. (Original) An electrophoretic medium according to claim 73 wherein the gelatin comprises about 5 percent to about 15 percent by weight of the electrophoretic medium.

75. (Original) An electrophoretic medium according to claim 69 wherein the polymer is cross-linked around the pigment particles.

76. (Original) An electrophoretic medium according to claim 69 wherein the polymer is chemically bonded to the pigment particles.

77. (Original) An electrophoretic medium according to claim 69 wherein the particles have from about 1 to about 15 per cent by weight of the pigment of the polymer chemically bonded to the pigment particles.

78. (Original) An electrophoretic medium according to claim 77 wherein the particles have from about 4 to about 15 per cent by weight of the pigment of the polymer chemically bonded to the pigment particles.

79. (Original) An electrophoretic medium according to claim 78 wherein the particles have from about 8 to about 12 per cent by weight of the pigment of the polymer chemically bonded to the pigment particles.

80. (Original) An electrophoretic medium according to claim 69 wherein the particles comprise a metal oxide or hydroxide.

81. (Original) An electrophoretic medium according to claim 80 wherein the particles comprise titania.

82. (Original) An electrophoretic medium according to claim 81 wherein the titania particles have from about 6 to about 15 per cent by weight of the pigment of the polymer chemically bonded to the pigment particles.

83. (Original) An electrophoretic medium according to claim 82 wherein the titania particles have from about 8 to about 12 per cent by weight of the pigment of the polymer chemically bonded to the particles.

84. (Original) An electrophoretic medium according to claim 69 wherein the particles comprise carbon black.

85. (Original) An electrophoretic medium according to claim 84 wherein the carbon black particles have from about 1 to about 25 per cent by weight of the carbon black of a polymer chemically bonded to the particles.

86. (Original) An electrophoretic medium according to claim 85 wherein the carbon black particles have from about 8 to about 12 per cent by weight of the carbon black of the polymer chemically bonded to the particles.

87. (Original) An electrophoretic medium according to claim 69 wherein the polymer comprises charged or chargeable groups.

88. (Original) An electrophoretic medium according to claim 87 wherein the polymer comprises amino or carboxylic acid groups.

89. (Original) An electrophoretic medium according to claim 69 wherein charged or chargeable groups are bonded to the pigment particles separately from the polymer.

90. (Original) An electrophoretic medium according to claim 69 wherein the polymer comprises a main chain and a plurality of side chains extending from the main chain, each of the side chains comprising at least about four carbon atoms.

91. (Original) An electrophoretic medium according to claim 69 wherein the polymer is formed from any one or more of an acrylate, a methacrylate and a substituted styrene.

92. (Original) An electrophoretic medium according to claim 91 wherein the polymer is formed from any one or more of 2-ethylhexyl methacrylate, methyl methacrylate, isobutyl methacrylate, t-butyl methacrylate, lauryl methacrylate, isobornyl methacrylate, 2-ethylhexyl acrylate, t-butyl acrylate, 2,2,3,4,4,4-hexafluorobutyl acrylate and p-chloromethylstyrene.

93. (Original) An electrophoretic medium according to claim 69 having two types of particles differing in at least one optical characteristic and having differing electrophoretic mobilities.

94. (Original) An electrophoretic medium according to claim 93 wherein both types of particles have from about 1 to about 15 per cent by weight of the pigment of the polymer chemically bonded to, or cross-linked around, the pigment particles.

95. (Original) An electrophoretic medium according to claim 93 wherein the two types of particles bear charges of opposite polarity.

96. (Original) An electrophoretic medium according to claim 93 wherein the two types of particles bear charges of the same polarity but have different electrophoretic mobilities.

97. (Original) An electrophoretic medium according to claim 93 wherein the two types of particles comprise titania and carbon black respectively and bear charges of opposite polarity.

98. (Original) An electrophoretic medium according to claim 69 wherein the droplets are non-spherical.

99. (Original) An electrophoretic display comprising an electrophoretic medium according to claim 69 and at least one electrode arranged adjacent the medium and capable of applying an electric field to the medium.

100. (Original) An electrophoretic display according to claim 69 having two electrodes disposed on opposed sides of the electrophoretic medium, at least one of the electrodes being substantially transparent such that the electrophoretic medium can be viewed through the substantially transparent electrode.

101. (Original) A pigment particle for use in an electrophoretic medium, the pigment particle having a polymer chemically bonded to, or cross-linked around, the pigment particle, the pigment particle also having a charged or chargeable group bonded to the pigment particle separately from the polymer.

102. (Original) A pigment particle according to claim 101 wherein said polymer is essentially free from charged or chargeable groups.

103. (Original) A pigment particle according to claim 101 wherein the polymer is chemically bonded to the pigment particle.

104. (Currently Amended) An electrophoretic medium comprising at least one particle according to claim ~~[[100]]~~101 suspended in a suspending fluid.

105. (Original) An electrophoretic medium according to claim 104 wherein the at least one particle and the suspending fluid are encapsulated within a capsule.

106. (Currently Amended) An electrophoretic display comprising an electrophoretic medium according to claim ~~[[103]]~~104 and at least one electrode arranged adjacent the medium and capable of applying an electric field to the medium.

107-135. (Cancelled).